DIGITEC OPTICAL COLLIMATION AIDS

A new, unique system for laser SCT collimation!
For SCT's up to 12"

DO-SCTLASER

Digitec is happy to announce a unique product that will allow highly accurate SCT collimation. This collimator is based on a new concept that is much simpler to use than any of the standard SCT laser collimators currently on the market. This collimator is a point source laser that will project a beam through your telescope and onto a paper target some distance away. By examining the projected “donut”, it is very easy to determine the collimation status of your telescope. The collimator is designed to screw directly onto the rear threads of your SCT.

There are Several Advantages to this Technology

- It is faster, easier and more accurate than any of the standard SCT laser collimators sold today. Standard lasers require several iterations of swapping laser and eyepiece. The laser needs to be tethered to the back of the telescope using a metal cable to keep the weight on the rear of the scope constant. Besides being a hindrance, this introduces inaccuracies. After the swap you really have no way of knowing that you reinstalled square to the telescope or rotationally correct. Our collimator stays connected to the scope throughout the procedure completely eliminating this possibility.
- The collimator isn’t affected by seeing conditions or star movement.
- It is much more accurate than using a star for visual collimation.
- The laser is an excellent “point source” of light being only 2um in diameter. Other methods use the scatter from a collimated beam, which provides a very weak blob of light.
- The collimator is designed to screw directly into the back of your SCT. This ensures that the laser is exactly centered and level. This is extremely important for any collimating tool. This direct mechanical connection in combination with our highly accurate and calibrated collimator eliminates any guesswork.

The Importance of Proper Collimation
It is not uncommon for someone who has never collimated a telescope to be somewhat apprehensive about performing the procedure. This is understandable but completely unfounded. This is a simple procedure, and once you have done it a few times you will be comfortable with it.
Collimation, in its simplest terms, is the close alignment of the mirrors or other optical surfaces in your telescope. A telescope that is out of collimation will typically not perform as well as a lesser telescope (25-50% less aperture) that is in collimation. If you put the extra money into a larger telescope, you are not reaping any benefits of it unless you telescope is properly collimated. Also, no telescope will allow you to reach a crisp focus at the high power end unless collimation is near perfect. It is well worth the time and effort. Digitec specializes in collimation products that make this quick and easy.

How it Works
The following is an excerpt from the instruction manual showing the actual collimation procedure using this unique laser.

Collimation is generally done outside, and in the dark. It can be done indoors if you have the appropriate space available.

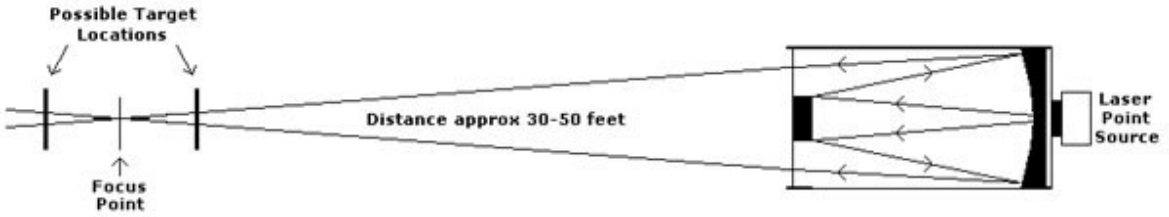
Allow your telescope to equalize in temperature before attempting this procedure.

Start by removing any external focuser, adaptor, or any other accessories from the rear of your SCT. You can avoid removing the accessories and use an adaptor to fit the laser into a 1.25 or 2 inch eyepiece holder. This is acceptable but we feel that it is worth the extra effort to connect the laser directly to the telescope. This will reduce any misalignments to a minimum.

Screw the collimator onto the rear of the telescope until it bottoms out.

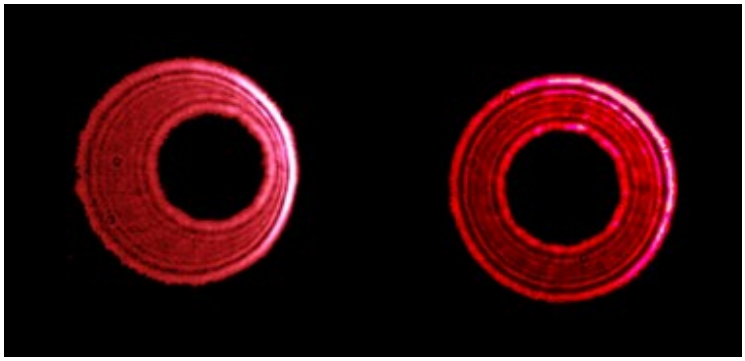
Close focus your telescope by carefully turning your focus knob fully clockwise until you reach its stop. This will get you to the closest possible focus point. If you wish to get further away, turn the focus control a number of turns counter-clockwise and then clockwise at lease two turns. You should always end your adjustment with at lease one turn in the clockwise direction.

Switch on the collimator. The telescope will project a cone of laser light that will eventually reach a pinpoint, and then expand out on the other side of focus.



Using a white piece of paper, or better yet tracing paper, walk downrange about 20 feet and place the paper into the projected laser beam. Close to the telescope it will appear as a large, dim donut. As you walk the paper further downrange, the donut will get smaller and brighter. Eventually you will reach a distance where the beam will come to a pinpoint. The goal is to adjust the distance until the donut is one to two inches in diameter. You can use either side of the pinpoint to achieve this, before or after. We recommend looking at both sides of the focus point as some mirrors will project slightly different diffraction rings. Also, experiment a little by moving the paper so that the donut appears a little bigger and smaller to get better detail in the projected donut.

If you look closely at the donut you will see a dark circle, and diffraction rings in the red area of the donut.



The image on the left shows a telescope that is grossly out of collimation. The image on the right shows collimation nearly perfect, perhaps a touch off to the left. The dark circle, which is the shadow of the secondary mirror, should be centered inside the donut. The secondary shadow, diffraction rings and the outer edge of the donut need to be perfectly concentric.
If they are not, simply return to the telescope and make adjustment on the collimation screws. It should only take a few adjustments to get it “spot on”.

When the collimation is complete, switch the laser off, remove it from your telescope and replace the accessories. Fortunately, SCTs hold collimation very well. Unless the telescope is bumped sharply or transported, you should remain fairly close.

That is all there is to it. We feel that this is the most highly accurate and easy to use SCT laser collimator on the market. This product comes with a one full year limited warranty.

Digitec Star Collimator and Steady Star

The Digitec SCT Star Collimator: D0-041 is a special high quality plossl eyepiece with internal crosshair and concentric circular reticles. These reticles act as a reference to allow very accurate defocused star collimations.

The Digitec Steady Star: DO-ASD is designed to provide a steady, stable reference for star collimation to be used in lieu of an actual star. This device will allow collimation without the worry of star drift or seeing conditions. This very bright, small point source of light will provide a consistent brightness, and throw off beautiful diffraction rings when defocused in any eyepiece.

This star is available in two versions.

The standard star uses a 3,000mc/20mah super white LED is projected through a precise micro hole. It is mounted on a 11"x11" ultra flat background for the highest possible contrast.
The Deluxe Star unit consists of a brighter 10,000mcd ultra white led focused on a smaller 100 micron precision laser cut aperture.

These Artificial Star and SCT Star Collimator are best when used together, but each individually will allow highly accurate collimation of your telescope.

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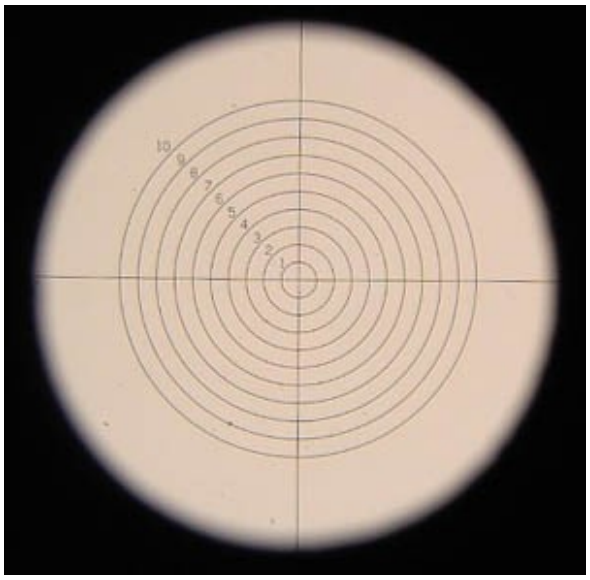
Collimation, in its simplest terms, is the alignment of the mirrors or other optical

surfaces in the telescope. A telescope that is out of collimation will typically not perform as well as a lesser telescope (25-50% less aperture) that is in collimation. If you put the extra money into a larger telescope, you are not reaping any benefits of it unless the scope is collimated. Also, no telescope will allow you to reach a crisp focus at the high power end unless collimation is perfect. It is well worth the time and effort.

Digitec Star Collimator

This special eyepiece will allow you quickly and accurately collimate your Schmitt Cassegrain, Newtonian, or any telescope that has a central obstruction. It can also be used on a refractor, as a reference to it's diffraction rings.
The eyepiece uses a 10mm fully multicoated Plossl, with an all-metal design.

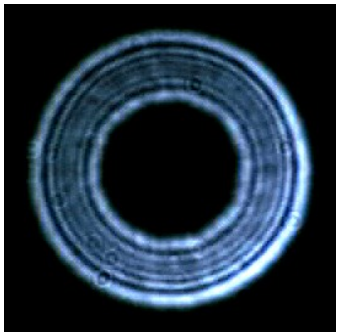
The eyepiece has incorporated within it a concentric circle reticle that takes the guess work out of star collimation. The cross hairs allow for quick and precise centering of the focused star.



We highly recommend using this product with our Artificial Star.

Digitec Artificial Star

The artificial star is designed to provide a steady, stable reference for star collimation. The unit consists of a 10,000mcd ultra white led focused on a 100micron precision laser cut aperture. This very bright, small point source of light will provide a consistent brightness, and throw off beautiful diffraction rings when defocused in any eyepiece.



The picture at the left shows the beautiful set of diffraction rings thrown off by the artificial star and an average SCT. The rings themselves make collimation easy to perform. Note the complete lack of any atmospheric disturbance. This photo was taken on an eight inch SCT using a modified webcam at prime focus. Star distance was approximately 50 feet from the telescope. This picture was taken on a 95 degree summer day just before dusk!

The star can be mounted on a table, stuck to a tree or attached to a standard photo tripod using the ¼-20 adaptor provided on the bottom of the unit as shown on the right.

These can be used at star parties to provide a star for everyone. It never moves, so there are no tracking or centering issues to worry about. It is unaffected by atmospheric disturbances so you can get an accurate collimation under any seeing conditions.

The placement of the star depends on the telescope. For an 8" SCT we recommend approximately 100 feet. The further away from the scope, the better until you start loosing contrast in the eyepiece. Indoor use is a possibility although we recommend collimation with the scope in position.

The following is an excerpt from the instruction manual showing its setup and use.

Using the Star Collimator

The technique is the same as the one you would normally use when star collimating a telescope, and faces similar restrictions.

If you are not using the artificial star, try to do your collimation when seeing conditions are acceptable. Poor seeing conditions will distort the shape of the star and make accurate collimation difficult.

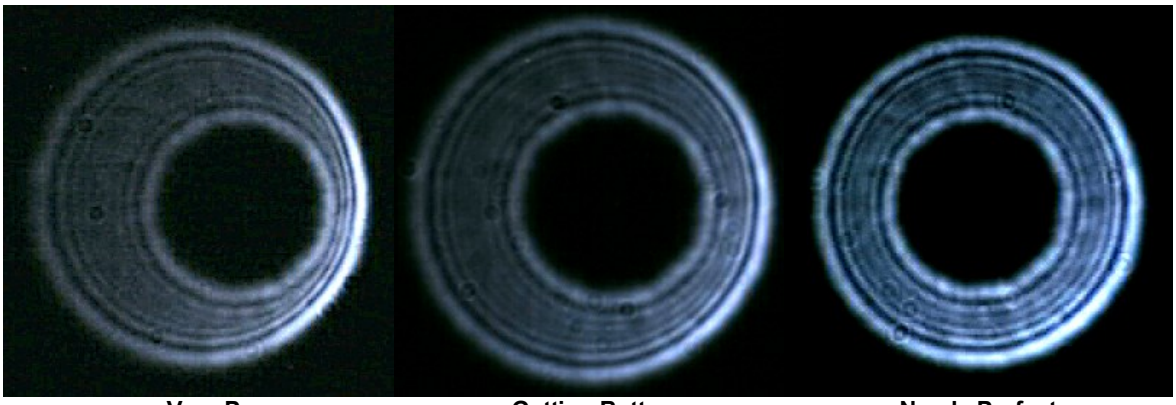
Pick a star that well above the horizon. The lower you get to the horizon, the more atmospheric disturbance will be present.

Make sure that your telescope is polar aligned and tracking accurately. You must

keep the star in the center of the reticle during the procedure. Poor tracking will make this difficult. We often recommend using Polaris as the collimation star due to its lack of movement for the short period of time it takes to collimate the scope.

You can overcome poor seeing and tracking by using our artificial star.

- Start by using the crosshairs and centering the star in the reticle.
- Defocus the star until the secondary shadow (dark circle) is at circle 1 to 2 on the reticle. Make sure the shadow stays centered. If you have some image shift when you defocused, then recenter the star.



Very Poor **Getting Better** **Nearly Perfect**

- Look the outside edge of the white doughnut. Is it concentric? If your scope is properly collimated then the dark circle will be in the center of the white circle. The concentric reticle makes this easy to judge. If you are using the artificial star, you can use its diffraction rings along with the reticle in the eyepiece for extremely accurate collimations.

The procedure for collimating your particular telescope should be outlined in its manual. **Please read the instructions there first**. It will tell you the location of the collimation screws and any cautionary notes concerning collimation adjustments.

Collimation is achieved by adjusting the three screws that change the angle of the secondary mirror. These screws are generally located in the center of the corrector plate on the front of the telescope. They are oriented in a circular pattern, 120 degrees apart. Minor adjustments to these screws will allow you to change the angle on the secondary mirror, thus allowing you to get the dark circle centered in the white donut. Only slight adjustments need to be made, often less than 1/8th turn. You should also be careful not to touch or scratch the corrector lens.

By adjusting the screws, and using the concentric circle reticle as a reference, adjust until the dark circle is dead center in the white donut. Keep the dark circle centered during the adjustments.

Original inventions by Chad LaFever